

REMARKS

Claims 11, 13-22, 24-28, 34-45, 47-50, 52-61, and 63-65 are pending. Claims 1-10, 12, 23, 29-33, 46, 51, and 62 are withdrawn. Claims 11 and 40 are amended with the support of at least Figure 3 and paragraphs [0024], [0058], and [0063]. The amendments to claims 41, 53, and 60 are made for clarity and/or for consistency with independent claim 40. No new matter has been added.

Interview Summary

Applicants gratefully acknowledge the time of Examiner Shahrestani and Supervisory Examiner Casler on November 12, 2009, to cordially and productively discuss how Applicants' modulation element differs from the optical modulator disclosed in the Nagai reference. The distinctions between Applicants' method and Nagai's method were also discussed. The amendments to the claims set forth herein were made in view of this discussion.

Rejections of the Claims Under 35 U.S.C. §102

Claims 11, 13, 14, 16-21, 26-28, 34-43, 45, 47-49, 52, 53, and 59-64 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 7,075,055 (Nagai).

Applicants respectfully disagree, at least in view of the amendments to independent claims 11 and 40. Claims 11 and 40 are directed to, respectively, a detection apparatus to detect magnetic fields and a method of detecting magnetic fields. Claims 13, 14, 16-21, 26-28, and 34-39 depend from claim 11, and claims 45, 47-49, 52, 53, and 59-64 depend from claim 40.

Among other features, claim 11 recites "a modulation element comprising a coil adjacent to the first magneto-optical element, the modulation element being a source of a time-varying magnetic field of sufficient strength to switch the first magneto-optical element between the stable states..." There is no disclosure in Nagai of such a modulation element. In the Office Action dated July 23, 2009, Examiner Shahrestani erroneously pointed to "structure 49" of Nagai as a modulator for applying a time-

varying magnetic field. In fact, there is no time-varying magnetic field supplied by Nagai's alleged "modulation element." To the contrary, the cited "structure 49" is an *optical* modulator "made to act on the focused light flux..." as clearly set forth in col. 52, lines 11-23, of Nagai. There is no disclosure anywhere in Nagai of a modulation element that satisfies the requirements of independent claim 11.

Amended claim 40 recites a method of detecting magnetic fields that comprises, *inter alia*, impinging light from a light source on the first magneto-optical element, applying a time-varying magnetic field from a modulation element to the first magneto-optical element, switching the first magneto-optical element between the stable states, and detecting a change in the light caused by a reaction of the first magneto-optical element to a magnetic field of a subject, the change occurring when the first magneto-optical element is in one of the transition regions.

Nagai does not disclose a step of applying a time-varying magnetic field from a modulation element to the first magneto-optical element, nor does he disclose switching the first magneto-optical element between the stable states. Nagai also does not teach or suggest detecting a change in the light caused by a reaction of the first magneto-optical element to a magnetic field of a subject, where the change occurs when the first magneto-optical element is in one of the transition regions.

Since Nagai does not teach or suggest each and every element of independent claim 11 or 40, the reference cannot anticipate these claims or any claims depending therefrom. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 11, 13, 14, 16-21, 26-28, 34-43, 45, 47-49, 52, 53, and 59-64 under 35 U.S.C. §102(e).

Rejections of the Claims Under 35 U.S.C. §103

Claims 15, 25, and 44 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai. Claims 22, 24, 50 and 52 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of U.S. 2002/0149832 (Matsushita), and claims 54-58 stand rejected under 35 U.S.C. 103(a) over Nagai and further in view of U.S. 2002/0173714 (Tsukada).


Claims 15, 22, 24, and 25 depend from claim 11, and claims 44, 50, 52, and 54-58 depend from claim 40. As discussed above, Nagai does not teach or suggest each and every feature of independent claims 11 and 40, and the other references cited by the Examiner – Matsushita and Tsukada – do not remedy this deficiency. At least for this reason, Applicants respectfully submit that a *prima facie* case of obviousness has not been established with respect to dependent claims 15, 22, 24, 25, 44, 50, 52, and 54-58, and thus Examiner Shahrestani is respectfully requested to withdraw the rejection of the claims under 35 U.S.C. §103(a).

Summary

Applicants respectfully submit that the pending claims are in condition for allowance. The Examiner is invited to contact the undersigned agent for the Applicant via telephone if such communication would expedite allowance of this application.

Respectfully submitted,

Dated: November 19, 2009


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